THE
VETERINARY JOURNAL

Editor :
FREDERICK HOBDAY, C.M.G., F.R.C.V.S., F.R.S.E.,
HONORARY VETERINARY SURGEON TO HIS MAJESTY THE KING,
OFFICIER DU MÉRITE AGRICOLE (FRANCE),
CAVALIERE DEI SS. MAURIZIO E LASSARO (ITALY),
HONORARY MEMBER OF THE AMERICAN VETERINARY ASSOCIATION,
PRINCIPAL OF THE ROYAL VETERINARY COLLEGE, LONDON.

Sub-Editor :
GLADSTONE MAYALL, M.R.C.V.S.

DECEMBER, 1927.

General Articles

THE ROYAL COMMISSION ON AGRICULTURE IN INDIA AND THE INDIAN VETERINARY SERVICE.

By ANGLO-INDIAN.

IV.—VETERINARY DISPENSARIES.

THE most effective method of administering veterinary dispensaries in India is a question that involves many difficult and complex considerations. The Royal Commission has devoted five questions to the problem which is obviously regarded as important. The designation "dispensary" has been preferred to that of "hospital." The writer suggests the use of the latter term where accommodation is provided for in-patients as a convenient method of discrimination. An intimate knowledge of the character and mentality of the Indian peasant, for whose welfare veterinary hospitals and dispensaries are mainly established, and of the men who are normally placed in charge, is essential in order to draw valuable conclusions.

During the last quarter of a century veterinary hospitals and dispensaries have multiplied exceedingly in India—probably a hundredfold—and from the figures available the average daily attendance may be said to be satisfactory, or more than that. On the whole they are doing good work in the localities in which they are situated, and in the writer's experience most of them more than justify their existence. For excellent reasons it is usual to locate dispensaries at the headquarters of districts and subdivisions of districts. In many cases these are municipalities with an urban population and, although the rural population as a whole look upon

such headquarters as centres, it follows that urban residents benefit to the greater extent. Distances between dispensaries are very great, and patients, especially cattle, can only be brought for treatment with difficulty. Although it is unusual to charge fees to agriculturists the expense involved in maintaining in-patients at a dispensary is heavy for rural inhabitants. The owner or attendant is not usually willing to leave his animal to the care of the staff, even if it is adequate, but at considerable expense and inconvenience elects to remain with it. Unless free quarters for attendants and fodder at rural prices are available, cattle in-patients from neighbouring villages are rare. Owners usually prefer to keep their animals in the nearest village outside the urban area and bring them daily. It frequently occurs that patients are not brought, but owners consult the man in charge of the dispensary and ask him to prescribe medicine or dressing. This involves guess work and some waste of medicine, but in spite of that, real benefit is frequently obtained, and on the whole dispensaries are popular. Much of course depends upon the personality of the man in charge.

The position is further complicated by the fact that in all but the larger hospitals, where more than one qualified man can be employed, the man in charge has duties which take him away from his headquarters. He is required to visit and deal with outbreaks of epizootic disease, and has other work to do on tour, in addition to obeying calls for help in individual cases. In consequence, he is frequently absent, and the dispensary has to be closed or left in charge of a compounder of doubtful competence. In some cases the latter are trained for first-aid work, whilst in others they are dependent on knowledge picked up at the dispensary.

It must be admitted that the system is imperfect, but it has arisen from nothing, and is a great deal better than nothing. Dispensaries are useful beacons of veterinary effort, and have an enlightening influence. They form centres where information can be interchanged and assistance usually obtained.

If it is decided that free treatment for agriculturists' animals is to continue, greatly increased expenditure on the part of Provincial governments and local bodies is necessary to provide a really efficient organisation. Urban residents should be required to pay fees, and as animals become more valuable and confidence increases, this should be gradually brought about. At present most are not prepared to pay under any circumstances, and where fees are levied, even rich men display considerable ingenuity in avoiding payment.

The real difficulties arise when the question of reaching the agriculturist in the remoter rural areas is considered. The natural

reply is that the solution is to be found in establishing touring dispensaries. In the writer's experience there is little to be said in their favour under present conditions in India. In the first place, the villager is not particularly pleased to see any Government servant in his village, and he does not discriminate between servants of Government and local bodies. He prefers to go and obtain advice when he wants it, rather than that it should be brought to him.

It may be that a touring officer discovers an animal requiring treatment, and even an owner who desires his assistance, but except in outbreaks of epizootic disease it is rare to find a case that cannot be much more satisfactorily treated at a hospital. In the second place it is difficult to obtain the services of an educated man who is prepared to lead a conscientious peripatetic existence in India. This fact presents almost insuperable difficulties in spite of what may be said by inexperienced reformers who visualise well-equipped travelling dispensaries in charge of men content to tour for some thirty days a month, most of which time they would be undiscoverable. There are many ways of avoiding uncongenial duties, and it is not possible to exercise the amount of supervision over itinerating men that is too often required. Educated Indians are domestically inclined, and the education of their families is very prominent in their minds. Consequently, touring duties are not popular unless very profitable, and headquarters at educational centres are desirable.

It may be argued that a frequent interchange of stationary and itinerating duties might be instituted, but again, the personal element arises. It would take about a year for a peripatist to attain any success, and to take him away when his work might be becoming useful would be shortsighted. Possible solutions to the problem are, firstly, to locate two qualified men at each hospital to tour alternately for half the month, or, secondly, to increase the number of dispensaries very greatly. Either plan entails a great increase of personnel and other expenditure, though the first is probably cheaper. The great objection to it is that responsibility for the work could not be fixed effectually, and endless difficulties would arise involving lengthy investigations. This might be avoided possibly by appointing three men to each hospital, of whom the most senior would normally remain in charge and the others would tour alternately under his orders. In the opinion of the writer, this last solution is a reasonable one and readily applicable to the larger hospitals where the employment of a senior grade officer is justified. He would probably be capable of obtaining effective work from his subordinates, as he would be in a position to know their movements. For convenience of administration there is no doubt that large hospitals with a touring staff attached to them

are likely to prove more effective than a multiplicity of small dispensaries, each in charge of one man, i.e., a separate peripatetic organisation. A system of training village schoolmasters in veterinary first-aid would be a suitable means of dealing with minor ailments in remote villages and would, in addition, have the advantage of providing an agency for calling on the services of qualified men when required. It would also have good effect in training the young villagers to have more regard for veterinary endeavour.

The question whether dispensaries should be under the control of local bodies or provincial authority is an everlasting one, and has been discussed from all angles. The usual practice is that the veterinary staff is provincial, i.e., composed of Government servants, whilst the remainder of the staff is employed and paid by the local bodies concerned. Accommodation and equipment are usually provided by local bodies with the aid of subventions from Government. Management is usually in the hands of Government with the collaboration of a local committee, the members of which may or may not take much interest in the matter. From a professional point of view greater efficiency is attained when dispensaries are controlled by Government through the agency of their veterinary advisers and their staffs. The men in charge of dispensaries are in the latter case subject to professional control, and are liable to transfer when such a course is considered desirable. On the other hand when local bodies have entire control of dispensaries the men in charge are subjected to little or no professional supervision, and they tend to become time servers. They are not directly available for team work in connection with outbreaks of epizootic disease which can only be dealt with effectively by Government agency.

If dispensaries are transferred to the control of local bodies it means that a separate establishment must be employed for dealing with outbreaks of disease. The members of such a staff would have little local knowledge or influence, and they would spend their time in the districts or unemployed at headquarters. An advantage to be gained by decentralising the control of dispensaries would be the reduction of the office work of Superintendents, as their professional cadres would be greatly reduced, but if efficiency is desired Government control is necessary, and the number of Superintendents should be proportionately increased with the number of subordinates recruited. If decentralisation is decided on a responsible veterinary officer should be employed by Government in each district, and be given considerable powers by the local bodies concerned over the subordinates employed by them.

When veterinary hospitals become to be regarded by the public

itself as indispensable it might be possible to lease existing Institutions to qualified men and allow them to recoup themselves by private practice. Such a system could not be adopted generally for many years, but it might be attempted in a few of the larger cities and towns. In theory veterinary hospitals and dispensaries should be established by private enterprise, but this is practically impossible in India, more particularly in rural areas, and provincial governments will have to face heavy expenditure in this direction for an indefinite period. But the desirability or rather the necessity of encouraging private practice should not be lost sight of, and any measures leading to that end should be carefully fostered. That it has not been entirely overlooked is shown by the fact that one government in India has suggested a scholarship for the purpose in preference to one for research. The course of study was not indicated.

A VISIT TO POLAND.

By Miss VIOLET WOOD,

Secretary, Council of Justice to Animals, 42, Old Bond Street, London, W.1.

On June 1st I left for Warsaw, having been invited by several Poles to visit that city and try to introduce humane killing into the abattoirs. Upon my arrival I was met by the Baroness Kosinska and Mdlle. Majewska, the Warsaw Society for the protection of Animals being represented by Dr. Koskowski and others. In the afternoon we visited the Municipal Dogs' Home, where about 50 dogs are destroyed daily by electricity. As the pens in which they were kept had stone floors, the dogs must suffer considerably at night and in winter weather, so I suggested that wooden boxes raised on feet would be an improvement, and the Superintendent most kindly promised that these should be built. To facilitate matters, we had two made at once as patterns, the Baroness Kosinska paying for one and our Council for the other. Although unable to speak one work of the language, yet the kindness and help I received made all attempts at work comparatively easy. The Warsaw Society had obtained permission from the Government for me to speak in the schools, Mr. Modzelewski kindly acting as my interpreter. Most schools being provided with magic lanterns, I was able to speak at nine, showing slides, and at a Hebrew school with diagrams, where a Jewish doctor kindly translated all I said. The teachers were most considerate and helpful, and the manners of the children perfect. That these lectures awakened an interest in animals we learned from the fact that they asked to have them repeated. Many more schools could have been visited but for examinations being held and the schools closing down. The chief of the Scouts, Mr. Grzymatowski,

XUM

asked me to write an article for the Boy Scouts, which he would translate and broadcast, so that between the schools and the wireless thousands of children were instructed in the proper treatment of animals.

The desire to do more practical work to ameliorate the sufferings of animals than the existing Society is able to accomplish, induced the Baroness Kosinska to invite ladies and gentlemen every afternoon to her house that I might meet them and explain how Societies of this kind are managed in England.

We decided that the most necessary thing, and one that would be the greatest boon to owners and animals, would be a dispensary. In Warsaw there are more cabs than taxis, and with very few exceptions the horses drawing them are unfit. Some are badly lame, a few had their hind legs dropping as they ran, many were blind and others had large sores. Rooms are not easily procured in Warsaw, but excellent ones were eventually rented from one of the principal veterinary surgeons in the most central part of the town, and his services were engaged for two hours a day. As no Society in Poland may receive money until it is legalised, and as that takes time to accomplish, I agreed, knowing that it would be the wish of my Committee, that our Council should pay the expenses of the dispensary for three months, at the end of which time the new Society would be in a position to take it over as its own. Leaflets were printed which we gave to cabmen and the poor in the streets, telling them that their animals would receive free treatment at this surgery every day. Upon its opening morning three patients were brought, and during the short time it has been in existence no fewer than 250 animals have been attended, among them a squirrel and a wolf.

To form a Society in Poland is not the easy matter it is in this country, since many rules and regulations have to be submitted to the Government. This one was fortunate in having as its founders persons well known and respected in the city, one amongst them being Prince Francis Radziwell, a nobleman bearing a name honoured for centuries in Polish history.

On June 7th I went with Dr. Schönborn and Dr. Koskowski to the Municipal Abattoirs, and gave a demonstration with the humane killer; two oxen, one horse and six pigs being shot. Unfortunately, all the slaughtering in Warsaw, except for pigs, is by the Jewish method, the horses having their throats cut by Tartars, so that they could only allow me a very limited number of animals to shoot. However, a man who witnessed the demonstration borrowed a pistol from me and shot 150 pigs during the week. Before leaving Warsaw I again visited the various slaughter-houses, and at both places where

pigs were slaughtered the superintendents were willing they should be killed by a mechanical instrument. I left one killer at each place, but many more will be required, and we trust the generosity of our readers will enable us to give them the necessary supply, the rate of exchange making it impossible for them to purchase them.

On two occasions Miss Crawford, a most energetic member of the new Society, and I, accompanied by the veterinary surgeon, took a taxi in the morning and drove from one cab stand to another for him to inspect the horses and give the men advice or tell them to bring the animals to the dispensary. Stables were also visited, and many terrible cases discovered by this method. At one market we found a horse eaten up by mange which had attacked every part of his body, another had a huge open wound the complete length of its back, whose driver we handed over to the police.

Many horses with large abscesses were working, others had blood running from their hoofs. One poor creature was so old that it was with difficulty it could eat; we tried to buy it to have it shot, but although it was worth merely a few shillings, the owner refused to sell it for more than three times its value. No words can express what I owe to Mdlle. Majewska, who gave up every day for a month to take me about, act as interpreter and serve me in every possible way. We were both also greatly helped by Mr. Dzierzawski taking us to places difficult to have visited by ourselves. There are many more to whom I owe a deep debt of gratitude, not only for the invaluable help they gave, but for making my stay in Warsaw so extremely enjoyable. A worker perhaps most of all to be honoured in that town is Madame Wolfram, who although possessed of extremely limited means, as is unfortunately now the case with so many Poles, has for years denied herself the simple necessities of life in order to buy chloroform to put to rest the many unwanted dogs and cats that abound there, as in every city. She alone in the town has for years performed this necessary work by sacrificing her small income and by overcoming her repugnance of the task. The method she employed of chloroforming was not ideal, but the best she could do to save them prolonged suffering in the streets. Before leaving England, the R.S.P.C.A. had given me two lethal boxes for Warsaw, and, with a gift of another from Miss Greville and one from our Council, I was enabled to give two to the Dispensary and two to Madame Wolfram. I lethalled several in her presence, showing how suffocation is avoided by allowing the entrance of plenty of air, and she is now able to put to rest all dogs and cats brought to her, without discomfort to the animal or trouble to herself, which considering she is in her eightieth year is of no small consequence.

For the month I was in Warsaw, the wrongs of animals and how best to redress them was a subject freely discussed by all classes of society and by different sects of religion. On the occasion of the Bishop of Fulham's visit to Warsaw, Mr. Carpenter, the English Chaplain, gave a reception to the members of his church in order that they might meet him, and at this he invited me to speak. The American Methodist Minister, Mr. Woodard, most kindly gave me his pulpit twice in order that I might preach upon the subject of kindness to animals. At the first service, which consisted of about 250 Poles, he provided me with an excellent interpreter, while at the following service those present understood English. It was gratifying to learn that at the conclusion of the services the congregation approached the Minister with the request that a Branch of the Society should be formed in connection with their church. The Theosophical Society invited me to address one of their conferences, Countess Helen Potuleska kindly translated for me, and made an excellent speech upon the subject when I had finished.

The new Society, under the name of the " Polish League of Friends of Animals," has now been legalised by the Government, and so now may ask for funds for the various activities in which it will engage. Their aim is to be entirely practical and to relieve suffering in all ways that they can. Money for an ambulance in that city of horses is sadly needed. One injured horse I saw being conveyed to the slaughter-house in a cart without springs. The jolting doubtless caused intense agony, and because it struggled it was struck heavy blows in the face. Calves were lying with legs tightly tied, with the result that cramp of the most painful description would result, for lack of pens, placed in which they would have enjoyed comfort, freedom and safety. In one Jewish poultry market I saw the birds' throats cut and then, though still alive, flung against a wall, dropping into a basket one upon the other. Education is needed to stop these evils ; it has now begun, and the League will take care it does not cease. Poor as Poland is, owing not only to the Great War, but to the terrible Bolshevik invasion into the country when the capital was nearly reachet, yet the Poles are determined this work for animals shall not fail, and the new League is contemplating taking rooms in another part of the town where a hospital and dogs' home could be combined.

Any reader interested in this League, which intends to extend its influence to other towns of Poland, can help it by sending a donation to this office.

The Council of Justice has now badges, which members are earnestly requested to buy and wear. They bear the words which are applicable to the work of the Society : " For all animals—Everywhere."

SOME DEVELOPMENTS IN REJUVENATION BY TRANSPLANTATION OF INTERNAL SECRETORY SEXUAL TISSUES.*

(From Abstracts by T. A. Kitt.)

By A. EICHHORN.

THE study of the nature and action of the internal secretory organs which has recently been termed "Endocrinology" directed the attention towards the sexual organs, especially the interstitial cells of the testicles and ovaries. Many attempts have been made to transplant such tissues through operations and to establish their significance. Glands, that is, those known as internal secretory glands (thyroid, suprarenal capsule, pituitary and thymus) transplanted through operations usually last only for two to three months at the point of insertion. After this time they atrophy and are absorbed. A transplantation even of such short duration may possess great therapeutic value as proved by the autoplastic transplantation of the thyroid gland following operation for goiter. Lichtenstern reported very interesting results on the transplantation of sexual organs. In a soldier who through a wound in the war lost his testicles and therefore exhibited total physical and psychic defects of a castrated person, was completely restored in his bodily and psychic vigour through an operation of the transplantation of a piece of a testicle obtained from another man.

In recent years several investigators have conducted a great number of experiments on man and animals, especially by Professor Sergius Voronoff. The highly interesting results of these, this author presented in the form of fascinating lectures before physicians and veterinarians, as well as representatives of other academic circles and officials. The Clinica Veterinaria reported in detail these lectures from which the following abstracts are taken.

Professor Voronoff, who is now actively engaged at the Institute of France, has for many years served as a body physician of the Khedive of Egypt, where an opportunity was given him in the palace to carefully observe and study the eunuchs. The physical and psychic conformation of these castrates is changed through the absence of the internal secretions of the testicles to such an extent that they lose all characteristics of the man. They no longer possess the growth of beards, they have a small pelvis, a smaller head when compared to other men, longer legs, inasmuch as the epiphyses calcify much later, their muscles are flabby with a tendency toward getting fat.

* This article is reprinted from *Veterinary Medicine* of July, 1925, in view of the fact that a Scientific Committee (including Representatives of Veterinary Science) have lately been to Algeria to see the recent developments of Prof. Voronoff's operation on sheep.

XUM

Their brain functions slowly, inasmuch as they show poor memory and find with difficulty words for their expressions. Signs of age appear early, they turn grey at the age of 40 ; at 35 their eyes manifest changes which commence in men only at the age of 60. Likewise they are subject at an early age to arteriosclerosis. All of this is directly connected with the loss of the internal secretion of the sexual glands through which the combined accommodating action of the other organs of internal secretion is disturbed. In contrast with this we have the normal man with strongly developed sexual glands.

Professor Marro observed a boy of nine years old who had three testicles and who manifested a very pronounced growth of hair as well as a body and mental development of a man 20 years old.

These striking differences induced Voronoff to attempt transplantation of testicular tissue of animals. He commenced his first experiments in 1913 in which the transplantations were undertaken under the skin into muscles, upon the peritoneum or in different internal organs. They all failed. He found that at times the transplanted tissues remained alive and functioning for four to five months. In other cases the results were negative. Inasmuch as suturing the small arteries of the testicles with other arteries appeared impossible and inasmuch as the nourishment of the transplanted tissues is dependent upon the blood plasma, Voronoff sought for suitable media and decided on the tunica vaginalis communis, as this responds to all irritations with a profuse infiltration of blood plasma. He had hoped that the dissected long and thin segments of testicular tissue which contain the interstitial cells when placed upon the surface of the tunica vaginalis would be immediate ; that is, from the first day on flooded with blood plasma so that its nourishment and adhesion could be expected. Later with the development of a capillary circulation continuation of the life of the transplanted tissue is then assured. As a matter of fact, this expectation was realised so that the transplantations were not only successful in isolated instances, but in every case. Furthermore, the inserted piece of testicular tissue was active not only for several months, but remained so for seven years. Many histological examinations of transplanted tissues undertaken by Professor Retteren which remained in the tunica vaginalis of rams from two months up to two years proved that the transplantats were actively functioning. The experiments were successful in all species of animals and in the varying ages of these animals. A kid goat six weeks old into which a testicle was transplanted showed in four months an unusual growth of the body and especially of the wool. Most striking were the changes which were observed in old rams. The animals which were very droopy and from the conformation of

their body indicated their age, with weak legs, partial defects in the wool covering, inability to retain the urine, showed a remarkable improvement following the transplantation of testicular tissue from a young ram. One of these rams is now 21 years old, has developed a complete coat of wool and proved to have regained his successful breeding qualities, retaining them for three consecutive years. After removing the transplanted tissues for histological examination, the ram again became the victim of the weakness of age, but again recovered completely, including his breeding vigour after repeated transplantation.

The photographs of the two distinct conditions in this animal are reproduced in the Clinica Veterinaria for verification of these results. Voronoff has since 1917 carried out more than 200 such operations on animals with positive results.

The most interesting, however, are the results on man. The difficulty of obtaining such material for transplantation from young men for the purpose of rejuvenating older persons did not appear insurmountable, as Voronoff narrates that he obtained letters from dozens of such volunteers. Furthermore, one-quarter to one-third of a testicle is sufficient for a transplantation. There is, however, a law in France whereby no one could dispose voluntarily of his own body. This prohibition extends also to the removal of an organ from a person who was killed through an accident.

Accordingly Voronoff conceived the idea of utilising the testicles of anthropoid apes, especially of chimpanzees, inasmuch as the blood relationship which exists in a chemical-biological sense is proved by the serological facts between the ape and man ; likewise, the similarity of the red and white corpuscles promised the possibility of success.

Since 1920 Voronoff has the results of more than 60 such transplantations. The operation was not only performed by himself, but also by other surgeons (Professors Tuffier and Bother), in Italy by Professor Marro ; besides also in Spain and in England. In England the transplantations were undertaken for practical, that is, economical reasons, inasmuch as 27 men kept at the asylum for old men were operated upon which resulted in such recovery of youthfulness that it was possible to discharge them from the asylum. After the publication of the rejuvenating and longevity process, the author was besieged with hundreds of letters.

One cannot fail to smile when one reads that Voronoff selected for his work especially professors of universities ; also a great number of physicians, engineers, lawyers and authors. Voronoff contended that especially men of such vocation who according to experience are most valuable to continue to serve mankind deserve to be kept alive and rejuvenated. A further reason for preferring men of those

professions was that a more dependable observation and control of the experiments could be expected from them. The action of the testicular substance of the monkeys appears to have given splendid results. A playwright at the age of 64 became prematurely senile, was subjected to the transplantation and although retaining his white beard became again elastic and energetic similar to a young man; so much so that the opportunities afforded him in his connection with the theatre resulted in a practice of excesses which induced him after two years to again visit Professor Voronoff with the request that he repeat the transplantation. Professor Voronoff was gladly willing to again undertake the operation in order to observe whether the repetition would give positive results. As a matter of fact, that theatrical gentleman saw the return of his juvenile strength after four months.

The other literary men who complained of the loss of fantasy praised the transplantation as a means of bringing back to them the faculty of writing fiction and plays. A man at the age of 70 and one at 84 years observed failure in memory. Following the operation they regained a markedly improved memory and renewed ambition for work. As Voronoff states, one cannot, of course, expect that the muscle strength and brain function of the old men should be transformed to the vigour of youth. Nevertheless, it is certainly striking that aged men who after two or three hours of work usually tire, could again be made to work steadily for 8 to 10 hours daily.

Voronoff furnished scientific proof on the effectiveness through blood pressure tests. On the average, older men possessed a blood pressure of 20 to 28 cm.; about three months following the transplantation in these same men the blood pressure regularly dropped to 16-17 cm. The reduction of the arterial pressure according to Voronoff justifies the hopes that the method might be utilised also therapeutically against arteriosclerosis. Among the persons who showed a reduction of the blood pressure following the transplantation were even such men who previously suffered from hemorrhoids and who to their delight observed the disappearance of the affection.

Voronoff further demonstrated in such persons with the aid of the strength indicator, an increase in the energy from 25-32 to 50 and 54 K. It was further noteworthy that as a result of the renewed internal secretion to normal, in the long-sighted persons who were compelled to wear adjusting glasses, the crystalline lenses adapted themselves again to such an extent that eye glasses became unnecessary.

The successes observed in all these men could be criticised by some sceptics in a way that they resulted from suggestions and autosuggestions. These, however, may be readily contradicted by the

fact that the physical and psychic rejuvenation does not last only a short time ; that is, one to two months, but was present even after four years. A definite proof of the hormone action could also be established through the histological examination of the transplanted tissue. It was in itself of the greatest interest to follow to what extent a part of an organ of a chimpanzee may be made to become part of an organ of a man. It was not an easy matter to find a man who voluntarily was willing to have the wonderfully acting transplanted tissues removed again. Nevertheless, one volunteer was willing to place himself in the hands of the investigator and permit him to dissect again the tissues which fifteen months previously were transplanted by Voronoff. The volunteer gentleman, however, permitted this only on condition that a new transplantation be inserted immediately following the removal of the old.

Ths histological examination of the dissected piece disclosed that the seminal canals disappeared from the same ; on the other hand, there were numerous interstitial cells of normal structure. Inasmuch as the internal secretion is dependent on the functioning of the interstitial cells, while the seminal canals have only an excretory significance, there could be no doubt about the hormone action of the transplanted tissue.

The experiments of Voronoff have also an economical, zootechnical and industrial importance. They are noteworthy to veterinary science, inasmuch as they open to veterinarians a new field of activity. Voronoff observed following the transplantation of testicles into young rams a more rapid and increasing development of the musculature and yield of wool. He narrates that the breeders of sheep were astonished at the length of the wool (30 cm.) ; so much so that their shearing instruments adjusted to the shorter sizes had to be readjusted. Voronoff recommends for such improvements in breeding the transplantation of testicles from full-grown animals, for instance, from a ram nine to 10 months old to one only six months old. He carried out experiments on a larger scale in Algiers and believes that through methodical transplantations carried on through several generations (by taking, for instance, 100 young rams and rendering them into triorchids and again treating their offspring in a similar manner) it would be possible to produce early maturing and improved breeds. Furthermore, it would be possible through transplantation to retain the breeding faculties of Merinos which when imported from Australia to Europe soon become sterile. Besides, it would also be possible to rejuvenate aged male breeding animals.

In Italy attempts were already made to undertake such a transplantation on a valuable stallion. The No. 4 and 5 issue of the Clinica Veterinaria contains a photograph which illustrates Professor Voronoff,

XUM

Marro and Bernardina actively engaged in transplanting a testicle of a stallion into a mule. This work has been carried out at the Serum Institute of Milan and the results of these experiments are awaited with the greatest of interest.

The transplantation of ovaries was undertaken by Knauer, Steinach and other investigators in the most varied manner and the effects of such transplantations have been carefully studied. It is a known fact that after an operation removal of the ovary the uterus becomes atrophied. When the ovaries are removed from their normal place and are again attached onto another place of the body, the uterus retains its normal size. If ovaries are transplanted onto male castrated animals the milk glands of these castrates commence to grow and the physical behaviour of the animal becomes feminine (sexual reversion). The castration of female guinea-pigs which have just given birth to young, results in a cessation of the milk secretion in from eight to ten days. Re-implantation of the ovaries into primipara females induces the return of the milk secretion. Steinach has further published the fact that the transplantation of an ovary from an animal to a female of the same species stimulates its own ovaries to the production of follicles and ova and in senile female rats induced the disappearance of all indications of age and the re-establishment of the activity of the sexual apparatus.

The most interesting experiments in this line was published by Professor Frei and Dr. Kolb (Zurich). A fourteen-year-old female goat which manifested the most pronounced indications of senility and which was entirely hairless on one side of the body and on the other side showed partial alopecia, having a completely atrophied, functionless milk gland, having also been sterile for three years and besides disclosing a weakness in the loin to such an extent that in order to make it rise it required the assistance of an attendant, following the transplantation of two ovaries from a twelve-weeks-old kid, this same animal showed marked signs of rejuvenation. The ovaries which were aseptically removed from a freshly slaughtered kid were cut in pieces and transplanted into the musculature of the right croup, and intraperitoneally (May 21st, 1921). Approximately after one month the udder of the goat commenced to swell and the goat became so much more active that it could rise without assistance. At the same time the hair commenced to grow, which after another month covered the animal with a regular young coat of hair. Five months after the operation (October 21st, 1921), the goat showed marked estrum, lasting for three days. It was bred and after the regular time (early April, 1922) it gave birth to a well developed living kid. In the first five weeks the animal also gained in body weight before becoming

pregnant, the increase in weight amounting to 15 lbs. Unfortunately, it became necessary to slaughter the goat soon after on account of a purulent gangrenous mastitis.

Whereas the hormone action resulted in this case in a reactivation of the ovaries and cessation of the sterility, Haberlandt obtained in transplantations of ovaries from pregnant animals onto normal female rabbits and guinea pigs a transient sterility. Frei and Kolb explained this difference in that when the transplanted ovaries contain a fresh yellow body, this corpus luteum corresponding to its hormone action, hinders the development of follicles in the ovaries. If, however, a transplanted tissue does not contain a yellow body, the other hormones come in for their activities which stimulate the development of follicles. The general influence of the metabolism and nervous system by the sexual hormones is a very intricate process in which all endocrine glands and the nervous system participate.

In the issues of the CLINICA VETERINARIA mentioned there appears a photographic reproduction of a sixteen-year-old bitch which was in a senile condition prior to the implantation of ovaries from a young bitch. Likewise a reproduction of the same animal showing the striking rejuvenation which followed the implantation. The bitch, which was operated upon by Dr. Pettinari, was fat and asthmatic prior to the operation and could move about only with difficulty. The laparotomy which was undertaken for the purpose of the intraperitoneal transplantation revealed that the ovaries were in the state of shrinking. The young ovaries (of an eight-months-old bitch) were sewed on with the aid of catgut to the old ovaries. Besides two pieces were introduced subcutaneously into a pocket in the abdominal region. An aseptic healing of the wound followed. The subcutaneously implanted pieces were absorbed. As early as one week the general behaviour of the old animal changed. She became lively, the respiration was more normal, she barked readily, the body became more slender, later estrum developed so that after breeding one year and three months following the operation she gave birth to five well developed puppies. The same bitch nursed the puppies as proved by two accompanying illustrations.

In human medicine transplantation of ovaries which were undertaken for the elimination of climacteric disturbances failed to result in permanent recovery, but was followed with the atrophy of the implanted tissue and women were again compelled to go through the crises of the change of life. In some cases, on the other hand, the operation had the effect that the old ladies became affected with pronounced sexual desire. As a result of the condition that women following the cessation of the ovarian endocrines succumb more or

less to mental depression and can no longer enjoy life the same as men who even in old age still continue to enjoy the intellectual pleasures, art, science, beauties of nature and even sensualities, there will no doubt be some elderly dames wishing for the ovaries of a chimpanzee.

SOME NOTES ON POULTRY DISEASES.

By Major C. G. SAUNDERS, D.S.O., B.V.Sc., M.R.C.V.S.,
Poultry Pathologist to "The Farmer and Stock-breeder" Worthing.

The enormous expansion of the poultry industry during the last few years has stimulated the investigation and research into poultry diseases and the means of dealing with them. Although the treatment of individual birds, or for that matter flock treatment, is seldom a paying proposition, and not often called for, the diagnosis and prophylactis are matters of great moment to the breeder either of fancy or utility birds, and should be in the hands of the veterinary profession rather than at present in the hands of "self-styled" poultry experts and sellers of quack remedies. It has been my good fortune to have had the opportunity of investigating some of the common diseases that are prevalent in this country, and it is hoped that a short account of these may prove of general interest even to those that have not specialised in avian pathology. One matter that was very striking after the making of about 1,000 *post-mortem* examinations on all classes and ages of birds, and making a *précis* of accounts of symptoms, etc., received with the specimens, was that, with very few exceptions, the symptoms quoted were simply those of a dying or mortally sick bird and were by no means specific of any one or particular disease. The realisation of this showed at once how difficult, if not quite impossible, it is to make a diagnosis during life. It also showed the all-importance of a *post-mortem* examination and, as regards the *post-mortem* lesions themselves, how they differed from the typical ones laid down in the few textbooks dealing with the subject.

Coccidiosis.

The greatest mortality from this disease occurs among young chicks during the first few days or weeks after hatching, but birds of all ages are susceptible if exposed to a sufficiently concentrated degree of infection. Of 1,000 chicks examined, 600 were found to be affected with coccidiosis, the lesions varying from the typically implicated cæca, filled with cheesey matter and with ulcerated mucous membrane (indicating an infection of some duration) to acute cases in which the cæca were filled with an hæmorrhagic exudate; or in which all that could be observed by the naked eye was a general but slight congestion of the whole of the intestinal canal, with congestion of the lungs and

kidneys. Diarrhœa, sometimes hæmorrhagic, had occurred in some cases. In a great number comparatively sudden death, preceded by convulsions, was the history, while in others the symptoms noted were drooping wings, ruffled feathers, leg weakness, heavy breathing and crowding up around the brooder lamp for warmth ; but in quite a number of cases the birds were found dead without any previous signs of illness, and this was the report received with the body. It is thus quite evident that as far as symptoms go, they are quite useless as far as diagnosis goes, because similar symptoms are noted in B.W.D., pneumonia, digestive disturbances from improper feeding, etc., and the conclusion come to as regards *post-mortem* diagnosis, is that (owing to the wide variation in the lesions) while many cases may be diagnosed without, microscopical examination of the bowel contents and discovery of the *eimeria avium* is essential and should upon no occasion be omitted. In older birds and especially turkeys, peafowl and guinea fowl, the disease runs a more chronic course, and the liver becomes invaded by the parasites ; while in one case the kidneys of a goose were found to be affected, much enlarged, and filled with nodules, the contents of which were swarming with coccidia. One hundred cases of the disease in turkeys have been investigated, 12 in adult hens, 8 in cock birds, and 19 in laying pullets, this bringing me to the important matter of " carriers."

The word " carrier " is used for want of a better, although not strictly accurate from the bacteriological point of view, but meaning in this instance an affected adult bird that may infect its eggs with the coccidial organisms ; since these may wander from their normal situation in the intestines or liver and find their way into the uterus by way of the cloaca, that common chamber into which both uterus and rectum empty. Not only is a " carrier " of coccidiosis a danger to the unhatched chick, but to the chicks subsequent to hatching, since she contaminates the soil and spreads the organisms broadcast. Coccidia have been found and identified both in eggs and in the intestines of unhatched chicks, clearly showing (what was long suspected) that infection may occur before hatching, and thus accounting for outbreaks occurring in newly-hatched chicks, which could not possibly have been infected otherwise.

Bacilliary White Diarrhœa.

This disease, commonly called B.W.D., causes an enormous annual mortality, and is by some considered the most important disease of poultry, although a careful consideration of the features of both diseases will, I think, place coccidiosis first, since it attacks all kinds of poultry at any age ; and the soil may remain contaminated for

well over a year, even when rested from birds for that period. B.W.D., on the other hand, destroys its victims, as a rule, during the first ten days of life, although some deaths may occur up to 21 days; and then, with the exception of a "carrier," or so, that may die from ovarian complications, the mortality ceases entirely. In addition, B.W.D. being a bacterial and not a protozoan disease, disinfection of the premises and equipment are more easily and effectively carried out, and the bacilli more easily succumb to natural influences in infected soil. The "carrier" problem in the case of B.W.D. is certainly a greater one than in the case of coccidiosis, as being more general, but on the other hand the B.W.D. "carrier" may be detected with greater readiness and sureness than a coccidiosis "carrier" by means of the agglutination test, which is not applicable in the case of the latter disease. Here again, in B.W.D., the classical and orthodox symptoms are wanting or misleading, and neither are the *post-mortem* lesions in any way diagnostic, and a bacteriological examination for the culture and identification of the causative organisms is an absolute essential. It is quite true that the existence of B.W.D. may be suspected, when numbers of chicks under 21 days of age are dying, and the *post-mortem* examination of a number of them reveals a variety of conditions such as slight congestion of the lungs to pneumonia, intestinal catarrh with a milky fluid in the cæca and rectum, or simple congestion of the intestines and kidneys, and microscopical examination of the bowel content, lung exudate, etc., fails to reveal either vegetable or animal parasites that might be the cause, and this coupled with the history of the outbreak, conditions of feeding and management, or of the history of purchased eggs, may enable one to arrive at a diagnosis in a roundabout sort of way which is not to be recommended when bacteriological methods are available. The bacilli, bacillus pullorum, may be recovered from a chick dead from the disease from almost any internal organ, and grown and identified in the usual manner of the laboratory, but this naturally takes time, and a diagnosis of B.W.D. cannot be made as expeditiously as that of coccidiosis.

Congestion of the Lungs, Etc.

Congestion of the lungs and pneumonia are frequently encountered, apart of course from the secondary lung conditions occurring in B.W.D. or coccidiosis, and may be variously ascribed to chilling, foul air, lamp fumes in the brooder, or to the invasion of the vegetable fungus, *Aspergillus fumigatus*. In all 200 cases due to these causes were investigated of the 1,000 *post-mortem* examinations made.

Tuberculosis.

This disease appears to be steadily on the increase, but presents no special features of interest, except that on the case of birds, the

lungs are very seldom affected, only two cases of this having been observed. Male birds appear to have considerable resistance to this disease, one case only having occurred as against 60 in hens; four in pullets; one in a young chick; one duck; one flamingo.

DIGESTIVE.

Forty-three cases of fatal digestive trouble from the feeding of unsuitable foods occurred among young chicks, and many cases of impaction of the gizzard and duodenum by masses of tangled grass, etc., were found in young turkeys.

Cases of roup, in all its forms, were numerous, and this disease appears to be widely distributed throughout the country, and the question of preventive vaccination naturally presents itself, but the conflicting reports concerning this has made me diffident in recommending it, although I may say that letters have been received from clients that have practised it, containing excellent reports as to its efficacy and simplicity of application, and it is to be hoped that it will be more extensively practised in the future so that the results as attained in the field may be compared against those obtained in the laboratory, and this the more so, as at present the treatment of roup or avian diphtheria is almost entirely empirical.

The balance of diseases and conditions is made up of cases of fowl typhoid, cholera, peritonitis, following rupture of the uterus, retention of collapsed eggs in the uterus, aborted ova, perforations of the gizzard and intestines by nails and other foreign bodies; diseases of the liver, amyloid, fatty degeneration, infiltration, cirrhosis, new growths of, rupture of. Poisoning by phosphorous, arsenic, lead, spoiled foods. Rickets and osteamalacia, vent-gleet, parasitic infestations of liver, intestines, air sacs, trachea and bronchi; duck and goose septicæmias, infectious cerebro-spinal meningitis and septicæmias of unknown or unidentified origin. Apoplexy of brain, lungs, ovary, and internal hæmorrhages from ruptures of vital organs messenteric and ovarian arteries. Gout, nephritis acute and chronic, uræmic poisoning.

Many deaths among young chickens, turkeys, partridges and pheasants were traced to the gape worm, *Syngamus trachaelis*, while this worm was quite commonly found in birds dead from other causes, mostly coccidiosis, and while these parasites are quite commonly found in adult birds, only one case was encountered in which death could be attributed to them, and in this case the trachea was literally packed full of worms, and the lungs pneumonic. There is a vast field for research opened up in the realms of avian pathology, how vast can only be appreciated by those that have given it special attention

and who can realise the economic importance of the control of the various epidemic and parasitic diseases that affect birds. Just one instance of what an epidemic of B.W.D. can do, and which was traced to " carrier " breeding stock, " out of 23,000 sitting eggs, only 2,600 birds were reared," the remainder dying from the disease, these figures being taken from a letter from a breeder whose flock is now being tested for " carriers " by the writer.

VETERINARY PRACTICE IN CANADA.

THE following is an extract received from a M.R.C.V.S. who graduated in England some years ago, and afterwards went to Canada.

" I left the Government service three years ago and have settled here doing a little country practice, and the wife and son are poultry keeping. They have about 600 laying birds.

" Practice in this country does not amount to much. Do not advise any veterinarian to come out here with the idea of getting a living through his profession, as he will be doomed to disappointment. With some few exceptions, most veterinary surgeons have something on the side which brings in a better income. At the present time the price of stock is so low, that they are in the owner's opinion, not worth the expense of calling in a practitioner.

" I suppose that practices in England are not now worth what they were ? "

Clinical Articles

SUB-PERITONEAL ABSCESS FOLLOWING CASTRATION IN THE HORSE.

By R. HUDSON, F.R.C.V.S.,
Retford.

I cannot remember reading any account of the above condition, and having had several cases in my own practice following my own operations and those of others I must conclude that it is fairly common and that it may not have been reported.

The abscess may be present in the pelvis lying alongside the bladder, in the region of the internal inquinal ring, or extending from that locality forward to the flank. It is easily diagnosed per rectum, feeling like a lightly distended, immovable mass of considerable size, usually painful on pressure and without the doughy feel of intestinal contents.

The symptons are those of a local peritonitis. The colt loses appetite, becomes tucked up, tight and dirty in his skin, temperature elevates sometimes as high as 105-106°. The pulse is hard, thready and fast,

often 80-90°. The loins are arched and the gait stiff and painful. Thirst may be marked and if the abscess is in the pelvis there is frequent micturition, small quantities of urine being passed with straining afterwards. Occasionally, the abscess may have a fistulous opening into the scrotum and partly empty itself through it. In one case an old hunter, this condition had been going on for years without interfering with the animal's work.

In most cases the symptoms are first noticed three or four weeks after castration and usually in those colts which have suffered least from the operation. Often there has been so little swelling that the owner has remarked that one would not have known that he had been castrated. The condition is often fatal in one to three weeks. The abscess may burst into the peritoneum or cause death by exhaustion from pain, interference with urination and deflecation and septic absorption.

The abscess being situated under the peritoneum may occasionally offer an opportunity for surgical treatment. In one case the abscess was opened and drained through an opening at the flank. It felt like a thick sausage-shaped distension extending farther than I could reach. It was only partly drained by the first operation, pressure from the intestine appearing to cut the long abscess into two portions, and so another opening was made through the abdominal wall and the remainder of the sach successfully drained.

Recently, in a case where the abscess was in the pelvis, pressing on the side of the urinary bladder, I was able to evacuate the contents into the rectum. Taking advantage of the fact that the peritoneum does not extend over the last portion of the rectum for some inches, I thought I might, by keeping to the side of the pelvis, puncture the abscess safely. The rectum having been emptied and cleansed I passed in a long seton needle, forcing it through the side of the bowel along the side of the pelvis into the swelling. Before withdrawing, a finger was forced along the track of the needle and then two fingers which were forcibly extended to dilate the opening. A large quantity of bloodstained watery fluid entered the rectum. The colt at the time of the operation was very ill, his temperature being 105° F., pulse 90, feeding very badly and constantly micturating a small quantity. In a day or two he commenced to improve, now two months after the operation is out of danger and looks like making a satisfactory cure.

I do not find that any particular method of castration offers security against this condition for I have known it follow operation by clam, actual cautery, ecraseur, in a rig, and emasculator.

Nor does cleanliness at the time of operation safeguard, for in the case of the rig I had to remove the testicle from the abdominal cavity

XUM

and there was no general peritonitis. Of course there is ample opportunity for infection of the wound after the operation. I have noticed that the condition has followed exposure to frost and rain after the operation and it may be that reduced vitality has rendered them more prone to infection.

The organism appears to find its way along the lymphalies on the outside of the linica vaginalis into the lymph spaces underlying the peritoneum.

PROLAPSUS ANI IN A YEARLING COLT.

By R. HUDSON, F.R.C.V.S.,
Retford.

THE subject was a hunter colt. He was found in the field tucked up, sweating, and showing considerable pain.

I found a round tumefied mass protruding from the anus about eight inches in diameter. The surface was broken in places, probably from rubbing it against a fence.

Having cleansed and lubricated it, I attempted to replace the prolapse, but found I could not. The colt not having been handled was bad to deal with.

Lubricating my hand, I passed it into the rectum and found it so swollen that I had to use pressure to force my hand along as far as I could reach. The mucous membrane was, here and there, studded with small scab-like elevations, but I could not tell what had caused them.

I recognised the impossibility of returning and retaining the prolapse and on closer examination I found it to consist of redæmatous mucous membrane.

Thinking I might reduce it by puncturing and syringing out the fluid, I inserted a scalpel in several places and when squeezing detached a portion of jelly-like material. I then continued to remove it with my fingers until I had cleared away the whole of the mass and the shreds of mucous membrane slipped back into the rectum.

Sponging him down I inserted a lump of lard into the anus and administered about three drams of aloes. I advised the owner to keep him on bran mashes for some days and to insert lard twice daily.

He was well purged the following day, and for two or three days after.

He showed pain when passing the first two or three motions, but beyond that the operation caused no inconvenience and he has done satisfactorily.

The cause of the prolapse in this case appeared to be an extension of the swollen mucous membrane which pushed out at the anus.

The presence of the scab-like lesions on the mucous membrane lead one to think that they may be due to parasites, but I could not find any in the rectum, nor in the fæces passed while under the influence of physic.

These cases in young horses are mostly observed during the latter part of the summer, and I have found that other veterinary surgeons have had them when I have.

INVERTED UTERUS.—INCOMPLETE REDUCTION.

By C. W. CARTWRIGHT, M.R.C.V.S.,
Dyserth, Flints.

SHORTHORN cow, recovering from an acute attack of mastitis, aborted a seven-months fœtus. Throughout the day straining was so persistent that owner requested my attendance to remove cleansing as he feared she would evert the uterus. By arrival cleansing had parted, but straining continued. On examination, found pelvis blocked by the inverted uterus, which was in a very tumefied and vascular condition. Raised hind-quarters and commenced carefully to reduce the organ which very slowly but apparently surely responded to my efforts; proceeding thus until nearly at the full length of my arm, there remained only the tip of one horn to be replaced. Here, however, matters came to a standstill, and in spite of a long arduous trial, it simply refused to become reduced.

By now it had become late, so it was decided to leave her until morning. Hind-quarters were banked up, sedative given while some iodoform and belladonna pessaries were inserted, in the hope that some relaxing action would be thus obtained. Next day cow was fairly comfortable, eating and chewing her cud, but at intervals had violent straining spasms.

The os had contracted and everything felt normal, until on exploring further, one still felt the tumefied tip of one horn about the size of a double fist or small cocoanut in the body of the uterus.

The cow was now cast, hoisted up by the hocks, when the uterus was filled with hot weak lysol solution, using several bucketfuls as well as a quantity of warm oil as aids to manipulation. Replacement, however, proved impossible, and after a prolonged trial, defeat had to be acknowledged.

Further treatment consisted of douching. Free use of pessaries and administration of internal antiseptics, chiefly formalin and tonics. From time to time one meets with occasional cases of "intro pelvic inversions," if they may be so described, the majority responding to manipulation more or less easily (usually less), while an odd case may be so hard, leathery or necrotic, as to defy reduction from the onset.

XUM

The case quoted is the first I have experienced where the tip alone could not be reduced. Discussing the matter with some professional friends I gathered that some had never encountered the condition; while others had met with one or two cases at most, all of which proved fatal. The cow in question has proved to be an exception, for to spite us all, she has survived and now promises to become a useful barren. May not this condition in a modified form occur oftener than we realise. The tip of the horn may become inverted, but kept within bounds by the contracted os. Thus these cases of persistent straining may arise which so often terminate fatally.

COMPLETE EVERSION OF THE UTERUS IN A SMALL POMERANIAN BITCH.

By HERBERT BUCKINGHAM, M.R.C.V.S.,
Norwich.

About 11.30 p.m. on June 10th, I was requested to examine a small Pomeranian bitch with complete eversion of both cornua of the womb. The everted portion was nearly black, very much swollen, and very friable; in appearance it was like two small lemons suspended by a short thick neck. She had bitten almost through the end of one of the cornua, leaving only the peritoneum intact, the wound being about the size of a five-shilling piece. The other horn had also been lacerated, although not quite so deeply, or so large, as the first one. I was told that she had had two dead puppies at four a'clock that afternoon. Her general condition was good and after half an hour's manipulation I managed to replace the womb into the abdominal cavity. I then dressed the parts with an antiseptic and administered a full dose of chlorodyne as a sedative, placing a couple of sutures across the vaginal orifice. These were removed on the 14th and the subsequent recovery was uninterrupted.

UNUSUAL FOREIGN BODIES IN THE ALIMENTARY CANAL OF A FOWL.

By HOWEL V. HUGHES, B.V.Sc., M.R.C.V.S.,
The University, Liverpool.

An interesting case of the above condition came to my notice a short time ago in a subject—a Dorking hen—which was intended for use in the dissecting room.

In preparing the subject and plucking away the feathers over the ventral abdominal wall a peculiar, rather hard, swelling (A) with pointed extremity was found to project half an inch outwards from beneath the skin immediately behind and below the position of the

gizzard. On opening into the abdominal cavity, this swelling was found to be continuous with another larger and more irregularly shaped mass (B) of firm consistency, which was intimately adherent to the lower part of the posterior wall of the gizzard. Cutting through the thick fibrous wall of the swelling a dark homogeneous solid mass resembling a coagulum was found within, and embedded in this were three brass pins (two in front (2 and 3) and one behind (4) and a piece of soft wire (5)(lying with the pins in front). Further examination revealed another pin (1) similarly enclosed, lying in front of the gizzard, from which it extended forwards on the outer surface of the left lobe of the liver, which showed a deep groove for its accommodation. The point of the pin in this case was directed forwards.

Fig. 1.

Judging from the position of the posterior group of pins and wire (A and B), it must be assumed that they had passed through the posterior wall of the gizzard where it is very thin. The anterior pin (C), however, with its point directed forwards, had evidently pierced the thick muscular wall of this stomach near the point where it lay, for a section through the wall here revealed a definite line of scar tissue indicating its track through the muscle.

Whilst foreign bodies are, of course, normally present in the gizzard of fowls in the form of stones, pieces of glass, grit, etc., it is rarely that such sharp bodies as were found in this case are swallowed. Cases are recorded where perforation has occurred and peritonitis resulted. Unfortunately no previous history of this case was available, but judging from the large amount of fat scattered throughout

XUM

the body and the general condition of the bird—an egg was present in the uterus—it would appear that it had suffered little ill effects.

Fig. 2.

INGUINAL HERNIA IN A BITCH.

By S. M. WOODWARD, M.R.C.V.S.,
Birmingham.

Subject.—Cross-bred Brindle Fox Terrier bitch, aged four to five years.

Nature of Complaint.—A large inguinal hernia on the right side.

History.—Hernia had existed for 12 months, but had increased in size considerably during past 14 days.

OPERATION.—The bitch was admitted to infirmary Monday, August 8th, having been previously prepared. Was operated upon at once. Chloroform administered with Krohne and Sesemann inhaler, which I prefer to others. The hernial sac contained right horn of pregnant uterus, one fœtus only being present. Traction applied and the left horn and body of uterus drawn through inguinal ring. Horns ligatured as high up as possible and excised. Cervix of uterus treated in same manner, the whole uterus and horns removed and the inguinal ring ligatured.

SEQUELÆ.—The bitch went on well till August 12th, when temperature rose to 104°. Wound opened up and pus evacuated. There was a recurrence of this condition on August 17th, after which no complications arose and the bitch was discharged from hospital on Monday, August 29th. She had never previously been in whelp.

Translation

PREVENTIVE AND SPECIFIC VACCINATION OF DOGS AGAINST DISTEMPER.*

BY M. LE DR. CH. LEBAILLY,
Director of the Bacteriological Laboratory of Caen.

ONE knows from the investigations of Carré in 1904 that distemper in dogs is caused by a filterable virus. Bacteria to which one formerly attributed the rôle of specific agents are now considered only as microbes of secondary infections. The filterable virus of distemper acts like the filterable virus that brings about epidemics of human influenza; its development in the organism diminishes or suppresses the resistance, natural or acquired, to the common pathogenic bacteria. One knows that distemper is contagious, epidemic in rearing establishments, endemic in the towns and that it strikes oftenest animals in the first year of life. Pure bred dogs are peculiarly susceptible.

For a long time it has been sought to counteract this malady by the help of an effective vaccination. A number of vaccines and sera have been produced against it. Experience and practice have shown them to be futile. They are represented to be prophylactics capable of developing in the system of the dogs a resistance to the secondary infections to which they frequently succumb when the specific virus of distemper has opened the port of entry to them.

Studying comparatively the two groups of filterable viruses of aphthous fever of cattle and distemper of dogs, I find marked differences which separate them from each other. I have carried out research into methods of vaccination against these two epizootics. If the conclusions as regards aphthous fever must be deferred, I believe

* Comptes rendus de l'Académie des Sciences, August 1st, 1927. *Revue Gen. de Méd. Vétérinaire*, September 15th, 1927.

they bring a practical solution of preventive vaccination against distemper. My experiences have been gathered from three supplies of virus of different origin collected in a pure state from the blood of dogs affected with distemper. They have shown me that these virus are easily preserved in a frozen state between 10 and 14 below zero for over a year. The malady which they produce in typical cases evolves as follows :—

Infectant contact or inoculation are followed by a period of 50 hours incubation; afterwards the temperature commences to rise and reaches its maximum 41° towards the 72nd hour. The period which follows is characterised by a more moderate fever. An inconstant cutaneous eruption appears as well as watery eyes, cough, discharge and digestive disturbances. These symptoms persist with variable intensity to the end of the malady.

At the end of 16 to 20 days a simple or double diffuse Keratitis declares itself. From the 28th to the 35th day nervous troubles arise : an uncertain gait, arched back, posterior paralysis ; a very marked emaciation. When the animal has escaped death by pleuro-perecorditis, broncho-pneumonia or paralysis, they commence their convalescence, the duration of which is long and the termination uncertain.

To completely hinder the evolution of this malady, to cause the dogs to resist without the least trouble experimental or natural contagion, such was the end that I proposed to accomplish. This note is with the object of making known the result of my experiences. Vaccination is carried out by inoculating once under the skin of the dog to be protected a dose of virus sufficient to render it refractory to infection. It is not possible actually to obtain the virus in culture. I collect it in the spleen, which contains large quantities of it. The liver, the brain, the blood give variable results. In other filterable virus diseases tests of vaccination with emulsions of organs or tissues treated by formol have given inconstant results, e.g., to Curasson in rinderpest, to Vallée, Carré and Rinjard in foot and mouth. Staub, on the contrary, has published reports of cases demonstrating vaccination with such products in avian cholera. In distemper of dogs the live virus in the natural state or simply attenuated is difficult to give in set doses ; its use leads to some checks. Killed by chemical agents, it becomes easy to titrate. As a producer one chooses a dog at the height of thermic ascension that follows contamination (the third or fourth day). The animal is destroyed by prolonged anæsthesia with chloroform. Its spleen is pounded and emulsionised in physiological water in the proportion of one gramme of the organ to 10 c.c. of solution. The virus is killed by the addition of an antiseptic; preference is given to formol, which Ramon has shown to be so

successful. The vaccinating emulsion is usable after 48 hours and probably preservable several months in the ice box. Inoculated under the skin by means of a large needle in a dose of 10 c.c. per animal, it confers immunity in six days. The necessities of experimentation have compelled me to put vaccinated dogs for four days only in contact with subjects fully infected; they have had a slight febrile attack without external symptoms. I have vaccinated 19 dogs from four to six months old which have all subsequently resisted inoculation with virus or direct contagion. Five unvaccinated dogs from the same litters have given one death on the 40th day from paralysis, two cases of serous and prolonged illness with Keratitis and cachexia, and two benign cases.

Abstract

NOTES ON SEX ORGANS AND SOME PROBLEMS OF REPRODUCTION.*

By E. A. WESTON, B.V.Sc.,
Subiaco, W.A.

In this paper it is not proposed to recapitulate the elementary facts regarding the reproductive organs, but merely to deal briefly with some of the more recent advances made in their study and with the practical application which is likely to be made of this knowledge.

The Constituents of the Essential Sex Organs.

Taking the essential organs which determine sex characteristics, first we find them to be the testicles in the male and the ovaries in the female. When we come to consider them in detail we find that they differ fundamentally from the other organs of the body. In every other organ the cells derived from the original germ plasm have undergone growth, development and change. They have, so to speak, bidden farewell to their childhood days and attained more stable and adult characteristics. The functions of the various groups found in the higher organs have been differentiated and the power of reproduction and growth has been greatly modified, or even lost altogether as in the case of the nerve cells. In the ovary and testicle, however, we have stored away a group of embryo cells retaining all their original powers and only awaiting a suitable environment to set going again all the phenomena of life.

* *The Australian Veterinary Journal*, of June, 1927.

The Endocrine Secretions.

The cells which are to form the future ova and spermatozoa are not the only constituents of the essential sex organs. The framework of these organs is composed of connective tissue cells which it will be remembered are of the epithelial type from which the secretory cells or glands are derived. To these or to some of these cells recent work has attributed the function of secreting a hormone or internal secretion which not only serves to produce the phenomena of sexual desire, but determines the various bodily characteristics associated with sex and in the case of the male at least exercises a stimulating effect on general body metabolism.

The Interstitial Hormone.—By removing the testicles from a young guinea pig and subsequently grafting into the peritoneal cavity or muscles some ovarian tissue, it is possible to produce an animal which in development, type of hair and distribution and size of the mammæ has all the characteristics of the female. Not only so, but male guinea pigs pursue it and are attracted to it just as though it really were of the opposite sex. Finally, if given young it will suckle them and soon develop a flow of milk. It is this interstitial hormone which stimulates menstruation and on total removal of the ovaries in the human female a premature menopause with distressing nervous symptoms and ill-health results. If, however, a piece of ovary is grafted into the abdominal wall menstruation continues normally and the ill effects of the operation do not develop. A very interesting case in a woman with a deformed pelvis was reported some time ago from the Melbourne Women's Hospital. A Cæsarean operation had to be performed on this woman when she was confined, and the operating surgeon had the good sense to make sure that no further operations of this kind would be necessary by removing the ovaries. A piece of the ovarian tissue was grafted into the abdominal wall, with the result that menstruation continued regularly, health was maintained and the sex life remained normal. At a considerably later period the same woman had to be operated upon for acute abdominal trouble, and the surgeon removed portion of the implanted ovary for histological examination. It was found to be functioning normally and producing ripe ova which would doubtless be discharged into the adjacent connective tissue during menstruation. As will be explained later, a similar phenomenon is not observed in testicular grafts. In these the spermatogenic cells atrophy and only the interstitial cells remain.

Lutein.—The interstitial hormone is not the only endocrine secretion formed in the ovary. The ripening of the ovum is, of course,

its chief function and at the time that this takes place a vesicle is formed which contains the ovum. The inner walls of this vesicle are lined by cells containing a yellow pigment known as lutein. After discharge of the ovum, the walls of the vesicle collapse and the yellow cells increase in number to form the *corpus luteum*. Should impregnation take place this body continues to increase in size and is believed to secrete a hormone which controls the development of the fœtus especially in its early stages. Removal of the *corpus luteum* at this stage is followed by abortion. It is not until the sixth month in the woman that it begins to be absorbed. Should fertilisation not take place reabsorption begins about the third week. The retention of the *corpus luteum* in a non-pregnant animal appears to prevent impregnation and is regarded as a common cause of sterility in cows. American workers claim to be able to detect these bodies by examination *per rectum* and to remove them by massage, but I am fain to admit that such delicacy of touch and manual dexterity are far beyond me. A microscopical section from the *corpus luteum* of a mare about three months pregnant on which I conducted a *post mortem* examination at the Zoological Gardens, was kindly prepared by Mr. Bennetts and he informs me that the fatty material with which the cells are loaded, is lecithin. The *corpus luteum* at the period referred to comprised fully one-third of the ovary and in colour was not yellow, but brown. In the ovaries of an old barren leopardess I found numerous retained *corpora lutea* which were about the size of a grain of wheat and a bright canary yellow in colour.

Development of the Udder and Milk Secretion.—Experiments tend to show that development of the udder and milk secretion are also regulated mainly by hormones. The early development of the gland seen at the time of puberty which largely affects the interstitial tissue, is provoked by the ovary, while the increase of glandular tissue during pregnancy is believed to be the result of a hormone secreted by the embryo. This hormone is said to have a double effect, stimulating the gland cells to increase, but inhibiting the actual production of milk at any rate in large quantities. The gradual decrease of the flow as pregnancy advances is also believed to be the work of this secretion. Development of the udder and milk secretion proceed normally when all the nerves in the udder are severed, but certain alterations in composition of the milk may result from severance of the sympathetic nerves interfering with the regulation of the blood supply. These nerves supply the dilator and constrictor fibres to the muscular coats of the arteries. The case of the Blazek sisters is interesting scientifically, but a disgrace to us from a sociological point of view. These sisters were a double monstrosity joined

permanently. They had separate nervous systems, but a common circulatory system. It was found that when one sister became pregnant the mammary glands of the other underwent development and secreted milk.

THE MENSTRUAL STIMULANT.—At or about the time the ovum is discharged menstruation takes place. This was originally supposed to be a reflex action set going by the pressure of the developing follicle within the ovary, but it has been shown that the phenomena develop both when the nerves have been severed and when the follicle has been punctured. Furthermore, an ovarian extract prepared from these organs during heat will, when injected into another female, produce this condition. It is therefore clear that the menstrual stimulant is a product prepared in the ovary and distributed via the blood stream.

Considerable discussion has occurred regarding the period at which the ovum is discharged. In women this has been observed to occur independently of menstruation, and in many cases it occurs two weeks prior to that period, but in cats and dogs Marshall and Jolly have found ovulation taking place during pre-œstrum. Aitken states in a recent number of an American journal that ovulation in the mare takes place during the last two days of heat and that numerous follicles ripen during the first few months of pregnancy. During œstrum there is hyperæmia of the uterine mucosa and in women, dogs and monkeys, actual hæmorrhage and proliferation of the cells. It is believed that the physiological outcome of these changes is the freshening and rejuvenation of the lining membrane ready for the reception of the fertilised ovum.

THE PASSAGE OF THE OVUM.

The route by which the ovum reaches the uterus is of course the Fallopian tube, with its bell-shaped fimbriated extremity, but it is not clear whether in most of our animals the ovum passes directly into this tube or is discharged into the abdominal cavity. It is certain that it can pass via the abdominal cavity as removal of the ovary on one side and the Fallopian tube on the opposite side does not prevent the ovum from reaching the uterus via the remaining tube. It is even possible that the ovum may spend some time undergoing development in the abdominal cavity and having in mind the extensive wanderings of certain larval parasites evidently prompted by some physiological necessity, the idea is not so absurd as may at first appear. In any case it is known that movements of the fimbriæ surrounding the *ostium abdominale* can produce a suction current which will direct

objects lying in their vicinity in the abdominal cavity into the Fallopian tubes. Once in the Fallopian tube the ovum is carried on to the uterine horn by means of the ciliated epithelium. It is generally stated that fertilisation takes place in this tube, fertilised ova having been found there, but no doubt ovum and spermatozoa unite in whatever portion of the uterus they meet. Vaginal pregnancies are not unknown, but whether fertilisation takes place there or higher up is a moot point. Several interesting conditions are observed in connection with the site of fertilisation; one in which a fertilised ovum attaches itself to the peritoneum and starts developing and the other where a similar ovum remains in the Fallopian tube instead of descending to the uterus. Of even rarer occurrence are development within the ovary itself or between the uterine coats. Usually these ovarian sacs rupture or tear away from their attachments, causing dangerous hæmorrhage and death, but occasionally they become mummified.

I have always wondered where fertilisation of the extrauterine ovum took place, whether in the ovary just prior to the bursting of the follicle when the retaining capsule is very much attenuated; in the abdominal cavity by a spermatozoon which had passed out through the *ostium abdominale;* or in the Fallopian tube, the ovary being subsequently thrust out into the abdominal cavity through some abnormal contraction of the tube or reversal of direction on the part of the cilia of the mucosa. Whilst both tubal and extrauterine pregnancies are frequently recorded in the medical journals, accounts of them are rarely seen in veterinary publications. In connection with the Fallopian tubes an interesting point cropped up in a discussion with my medical attendant when I was in practice. He stated that great care had to be exercised in flushing the womb in women, as liquid under pressure was liable to pass out into the abdominal cavity via the Fallopian tubes. Having never had any reason to suspect this in mares or cows, I submitted the matter to experiment by tying the nozzle of my pump into the *os* of an equine uterus and forcing liquid in under pressure. Although I split the peritoneal coat, no liquid came out of the tubes. It is not the intention of this paper to enter into a discussion of the changes undergone by the ovum during its development.

Other Secretions Affecting Sexual Development.—In addition to the ovary and testicle the thymus and pituitary glands form secretions affecting sexual development and the latter or rather its posterior lobe assists in stimulating the changes which normally occur at puberty. Removal of the thymus and hypertrophy of the

pituitary lead to sexual precocity, while atrophy of the latter gland gives a tendency to obesity and retention of infantile sexual organs. The pituitary is also believed by some authors to supply the direct stimulant for milk production. It may be of interest to note in passing that recent experiments go to show that the anterior lobe of this gland controls the development of the thyreoid which in its turn has such a profound effect on metabolism.

Factors Determining Sex.

A point of great interest to veterinarians and one which they are often called upon to discuss with their clients, is the factors which determine the sex of the young animal. Much light has been thrown on this by recent investigations which cover practically the whole field of life from plants to the higher mammals. It is known that the hereditary characteristics of the young are carried in the chromosomes or protoplasmic particles into which the nuclei of the ovum and spermatozoon break up when the cells are being ripened ready for discharge. Only one-half of these chromosomes is retained in each cell. Now it has been definitely shown that one parent usually produces cells containing only one sort of sex chromosomes which may be either male or female. The other parent will then form reproductive cells which may contain either the chromosome necessary for the formation of a male or the chromosome necessary for the production of a female. Taking the normal frog and cattle as two instances: the female frog will produce an ovum with only the female chromosome in it and the cow a similar ovum. Whether on mating a bull frog or a bull calf or *vice versa* will be produced by the two mothers respectively will be dependent on whether the spermatozoon fertilising the ovum contains either the male or female element. If the former we will get our bull frog and young bull, if the latter two females. In the currant moth and the fowl it is the female and not the male which produces bisexual reproductive cells. Where sex reversal is common, as in the frog, some curious instances of abnormal males and females have been studied. In one bull frog which became a bull only after having developed his female organs to a very advanced stage, it was found that the power to produce spermatozoa carrying the male element had been lost and his whole family of 700 proved to be daughters. The hormone from "her" ovaries had prevented "his" testicles from developing normally during the transition stage. The most interesting case of sex reversal which I have seen recorded, was that of a hen which had her ovaries destroyed by tuberculosis. She developed male characteristics and eventually a testicle. She was bred to a pullet and a fertile egg from which a chick was eventually

hatched, was laid by the pullet. This case was recorded by the Breeding Research Department of the Cambridge University, but I have had to quote it from memory as I have mislaid the original publication. The sex chromosome is not usually a single factor, but carries with it certain sex linked characteristics, such as the production of horns, special colouration and so forth. The study of freemartins is of great interest to veterinarians. It is known that twins of the same sex are normal and that when the twins are of the opposite sexes the heifer is often barren. Investigation has shown that twins have two sorts of placental membranes. In one case the membranes are all entirely distinct and in the other case the twins have a common chorion. From the chorion arises the chorionic villi which fit into the lacunæ in the mucosa of the mother's womb and carry the fœtal blood vessels. When the chorion is a common one the blood supply of the twins mixes. Now it is known that the testicles develop earlier than the ovaries and it is the internal secretion of the testicle of the male fœtus which, circulating in the blood of the female one, inhibits the development of her reproductive organs and makes her a freemartin just as the one time ovaries of our bull frog friend referred to earlier prevented him developing normal testicles. That this is so has been proved experimentally by Manoura in embryo chicks. He removed a portion of the shell from the incubating eggs and grafted pieces of embryo ovary or testicle on to the membranes. A fair proportion of these grafts took, and when the chick was of the opposite sex, they prevented normal development of the sexual organs. As a result he produced a number of " freemartin " fowls.

Recent investigations have been made to determine the relative roles played by the spermatozoon and the ovum in fertilisation. Generally, it is considered that the ovum brings to the union the cytoplasm and half the chromosomes, while the spermatozoon brings half the chromosomes and the material necessary for the formation of the centrosome, together with a stimulant of some sort that provokes segmentation. Experiments made with sea urchin eggs have shown that a spermatozoon mated with a mere fragment of cytoplasm from the ovum can be stimulated to produce an embryo by suitable chemical treatment. The eggs have also been fertilised by spermatozoa from the mussel and starfish. These are ultimately cast out by the ovum, but the effect of their penetration is to start cell division going. Needless to say, most of the embryos produced by these artificial means are abnormal and do not reach full development.

REJUVENATION.

In practical veterinary work a careful study is being made to determine the characteristics of normal spermatozoa and to differentiate

them from the abnormal forms found in fertile males. Voronoff, Steinach and their co-workers are applying to the rejuvenation of aged males the hormone secreted by the interstitial cells of the testicle, the former by grafting small pieces of testicle taken from young anthropoid apes into the testicular tunics and the latter by stimulating the production of fresh interstitial testicular tissue by ligation and section of the *vas deferens*.

This leads to atrophy of the spermatogenic cells and a corresponding increase of the interstitial tissue. I was talking to a surgeon who had recently visited Scotland, and he told me that he saw the operation performed there several times, and that a leading surgeon in Glasgow had done over 100 cases with very satisfactory results as regards general improvement of health. Voronoff maintains a farm in Morocco for the breeding of apes for testicular grafts. Hobday has reported one or two cases in animals operated on for rejuvenation purposes, but no permanent benefit resulted. In certain studies covering the periods of œstrum in cows vasatomized bulls have been used to run with the herd, so that the heat period may not pass undetected. A similarly treated ram might be of use in bringing on the ewes for valuable studs.

Conclusion.

In conclusion I would like to refer briefly to the practical application of this increased knowledge. First and foremost it is being utilized in the breeding of better plants and to a much smaller degree better animals. Later on I hope that it will find its most important field in cleaning up the disease ridden mongrel population of our great cities. Vasatomy and section of the Fallopian tube for the moron, the habitual criminal, the bearer of hereditary disease and the manifestly unfit are not only desirable, but in my opinion absolutely essential if our older civilisations are not to decay. In the veterinary field we are beginning to understand better the causes of sterility, to treat them by new methods. In the case of barren heifers development of the sexual characters is being obtained by grafting ovarian tissue into the muscles of the neck by a very simple technique and cases are recorded where this has been followed by œstrum and conception. The hormone from the grafted ovum appears to stimulate the dormant ova of the animal. I think, too, that later on testicular grafts will be used to increase vigour in valuable young bulls and rams which show a tendency to develop feminine characteristics. Their use for rejuvenating old males, as is done by Vornoff in the human subject, will not apply to our animals if as seems to be usually the case in man the rejuvenation is not accompanied by renewed fertility. In old females whose progeny is of exceptional value it will be com-

paratively easy and inexpensive to try out the effects of ovarian grafts in prolonging the breeding period. Artificial insemination is now being extensively studied in Russia and elsewhere, and is likely to prove of the greatest value in fox farming, where the male, often costing two or three hundred pounds, is monogamous. It will no doubt have a limited application in extending the breeding powers of our domesticated animals. As a cure for sterility its value has been much exaggerated, and this can be readily understood when it is remembered that sterility may arise from disease of any portion of the genital apparatus of either the male or female.

Abstracts of Current Literature

Konge, W. (Professor, Leningrad).—Some Observations on Distemper. —*Berliner Tierarzt Woch*, Oct. 7th, 1927.

From my experiences in the largest kennels in Russia, and from daily cases, I am of opinion that the great mortality in this disease is due to bad methods of breeding and in-breeding.

Too close in-breeding must be avoided, from five weeks old meat diet should be given; thirdly, baths as far as possible should be avoided—frequent bathing is injurious—the growing dog should have much liberty, dampness and draughts must be avoided, a course of worm medicine for mother and whelps must be carried out. I have had the best results with ol chenopodii and arecolin hydrobromide in combination with Kamala—ol chenopodii for round worms and arecolin for tape worms.

In diarrhœa of puppies I give salol and red wine. With such prophylactic measures I have had no case of death from distemper in the course of two years. In clinical practice I greatly favour Prof. Andrejew's colloidal bismuth, also salol, systematic injections with testicular fluid according to Prof. Krafkof and physiological salt solution in different modifications.

Salvarsan, neosalvarsan, urotropin, distemper serum, blood from distemper recovered dogs, strychnine subcutaneously and the electric battery are in my opinion useless and strychnine is absolutely injurious in many cases. In recent time in nervous cases I have had some very good results by raying with the Sollux lamp. The red filter is used and the raying only carried on for half a minute.

The unsuitability of baths in distemper is illustrated by the following case: An Irish setter ill with the nervous form of the disease was paralysed behind. With five injections of colloidal bismuth he

apparently recovered. Two months after recovery he was bathed in cold water from the Gulf of Finland and was again paralysed posteriorly. The owner would not let him be treated again.

Rovis R.—A Physiological Curiosity.—*La Clinica Veterinaria*, No. 48, p. 739.

A LARGE black boar was castrated with the American emasculator in the usual way and brought back into his sty. Rovis cleansed his instruments and then let the boar out into the yard again to see if there was any after bleeding. In this court there happened to be a brood sow which a short time previously had been covered by another of the owner's boars. Immediately the castrated boar began to stir her up and to the general astonishment covered her vigorously in the normal way. The author puts the incident down to the markedly great psychic procreative power in swine.

Schöchli.—Treatment of Streptococcic Mammitis of Cows.—*Schweizer Archiv. für Tierheilkunde*, Feb., 1926.

THE author refers to the observations of Gattiker, Brennwald, Bast, Kitt, Nocard and Mollereau, Hess, Bourgeaud, Guillebeau, Zschokke, Stark, Jensen, Ibel and Van der Linde and their different treatments for mammitis which are all listed and discussed in Schnorf's work which appeared in 1925.

These different treatments comprise :—

BRENNWALD.—Frequent milkings ; application of irritant frictions and Kaolin to the ailing organ.

BAST.—Stomachics internally ; massage with anodyne ointments and three milkings a day.

HESS AND BOURGEAUD.—Isolation of the subject, disinfection and prophylactic measures.

GUILLEBEAU AND HESS.—Carbolic and salicybic acid injections, 2·5 per cent.

ZSCHOKKE.—Frictions with camphorated ointment, with light blister ointment added ; dry off the quarter until the next calving.

ERNST.—At the commencement of the malady frequent milkings are indicated.

RUSTERHOLZ.—Lavage of the defective quarter five times a day with cold water, dry, massage and milk out.

SCHNORF.—Intramammary injections of an acridine derivative, followed by frequent milkings and massage.

Finally WELD recommends vaccines.

Basing his investigations on the excellent results obtained by Professor Schnyder in the Ambulatory Clinic of Zurich by repeated

milkings every hour or every two hours, Schöchli recommends the following treatment. The clinical diagnosis being confirmed by the microscope, the ailing quarter is submitted every hour or two hours to a massage with carbolised glycerine five per cent., or with camphorated liniment one in three. Massage downwards from above to below as performed, the hand being applied flat ; it is prolonged until the milk presents the character of healthy milk and no longer contains streptococci. When the milk has attained its normal characters two or three milkings a day after previous massage are sufficient to assure a definite cure. Repeated microscopic examinations verify the value and results of the measures employed.

Schöchli describes 30 cases of streptococcic mammitis and concludes as follows :—

(1) Twenty-five cures have been obtained in 30 cases, thanks to the procedure of frequent milkings.

(2) In 13 cases the cows have recovered their old flow of milk.

(3) The treatment has been unsuccessful in five cases.

The Veterinary Service of Turkey.—*American Veterinary Medicine.*

THERE are only a few private veterinarians in Turkey and these practice only among dogs and cattle in and around the large cities like Constantinople and Smyrna. The *arabadji* (coachmen) believe themselves better qualified to treat horses than the veterinarian. In the entire 72 departments (provinces) there are 230 graduate veterinarians and these are officials paid by the government. Owing to the prevailing quackery which is tolerated as a matter of course the peasant population is not accustomed to calling a qualified veterinarian and as a result no practitioner can hope to build up a practice in that realm. Among the graduates of the veterinary high school of Constantinople between 1909 and 1912, for example, 189 quit the veterinary profession for more promising occupations. The veterinary service is purely governmental and under the direction of the minister of agriculture in whose department are numerous research laboratories devoted to the control of animal disease. But Turkey has a disease-ridden animal population, and although the agricultural resources are vast, animal husbandry has made no progress, as in the countries which have veterinary practitioners in the field.

The cry of our agriculture for research laboratories and its indifference to the welfare of the practitioners who are the only means of taking the fruits of research to the farms recall the veterinary service of Turkey, which is like the goal towards which we are travelling.

XUM

Buhler Dr. R., of Teufen.—Goat's Milk for Children.—*Schweizer Archiv. fur Tierheilkunde*, March, 1927.

In a work entitled "Cure and Children's Milk," Dr. Siegmund has a good word for the goat. He shows the practical value of goat's milk by experiments and calls attention to the general good state of health of the goat. He gives an instance of the value of the goat as a nursing mother. A farmer's sow brought forth six piglets. The seventh one was too big to be passed so the sow was slaughtered and three of the six young died with her.

The three remaining piglets were nourished by a goat which had kidded a few weeks previously. The goat took to them immediately, and the accompanying illustration shows how comfortably they got in position for sucking.

After milking a few drops into their mouths they soon learnt to suck themselves. Since there were only two teats one youngster had to stand aside for a time and care had to be exercised so that all three got their share. After six weeks they left the goat mother, but had then become larger and heavier than other pigs brought up in the normal way. In the last period of sucking they needed so much milk that a second goat had to be brought into service. A comparison between the constituents of swine and goat milk is as follows:—

	Swine.	Goat.
Average Water Contents	80·35% ..	85·62%
Average Fat Contents	8·24% ..	4·77%
Fat-Free Dry Substance	11·41% ..	9·50%

Previous observers have found that where the goat has been milked and this given to orphan pigs they have died of diarrhœa, although

at four weeks old the goat's milk has been well digested and beneficial. Dr. Siegmund believes that in this case the pigs did well because they sucked direct from the healthy udder and the milk was germ-free and unchanged. Such milk is better supplied and digested than milked milk.

Errata

THE VETERINARY JOURNAL, Nov. 1927.—Article on the Royal Commission on Agriculture in India, page 548, line 5. For "our" read "one."

Notice

ROYAL VETERINARY COLLEGE.

SUPPLEMENTARY LIST OF SUBSCRIPTIONS TO THE REBUILDING FUND.
July 15th, 1927.

	£	s.	d.
Total of the Fund at May 21st, 1927, as per list issued that date	11,033	4	3
"A.B."	1	0	0
Anonymous	25	0	0
,, ...	5	5	0
,, ...	5	5	0
Armfield, J. M., Esq., M.R.C.V.S.	5	0	0
Ashton, T. H., Esq.	5	0	0
Atkinson, Captain F. B.	2	2	0
Bannister, T. H. C., Esq.	5	5	0
Bennett, J. H., Esq., M.R.C.V.S.	1	1	0
Bevan, L. E. W., Esq., M.R.C.V.S.	3	3	0
Bloye, P. W., Esq., M.R.C.V.S.	5	5	0
Bolton Canine Society	5	5	0
Branford, R., Esq., M.R.C.V.S.	2	2	0
Brown, Mrs. Malcolm	1	0	0
Brook, Mrs. M. F.	10	0	0
Broughton, Captain Henry	5	5	0
Broughton, H., Esq.	5	5	0
Campbell, Carter, Esq....	1	0	0
Clarke, C.B.O., Esq.	5	5	0
Clarke, Miss G. F.	1	0	0
Clothworkers' Company	100	0	0
Currie, E. G., Esq.	1	1	0
Davenport, Mrs. E.	2	2	0
Dilley, A. G., Esq.	2	2	0
Ditmas, Major F. B., M.R.C.V.S.	1	1	0
Duleep Singh, H.H. the Princess Sophia	5	0	0
Enthoven, E. J., Esq.	2	2	0
Fishmongers' Company	50	0	0
Frazer, Dr. Ewan	10	0	0

XUM

	£	s.	d.
Galloway, Miss E. M.	1	1	0
Galloway, Mrs. J. M. C.	1	1	0
Godwin, Mrs. E. M.	5	5	0
Greenwell, Mrs. J.	3	3	0
Guest, Miss A. S.	15	0	0
Hearn, Captain C. G., M.R.C.V.S.	5	5	0
Hope-Murray, Dr. P.	2	0	0
Hunt, Lt.-Col. F. D., O.B.E., M.R.C.V.S.	5	0	0
Hunt, Colonel F. W., C.B., M.R.C.V.S.	5	5	0
Jockey Club, The	500	0	0
Johns, Alfred, Esq., M.R.C.V.S.	1	1	0
Johnson, J., Esq.	5	0	0
Jones-Balme, F. E. T., Esq.	2	0	0
Kerrick-Walker, Miss G. A.	5	0	0
Knowles, Major R. H., M.R.C.V.S.	1	1	0
Leach, Lionel L., Esq., M.R.C.V.S.	10	10	0
Littleton Stud, The	3	3	0
Loder, Lt.-Col. Giles H.	25	0	0
MacGregor, Captain A. D., M.R.C.V.S.	5	5	0
Marriott, Major S. W., O.B.E., M.R.C.V.S.	5	5	0
Mayo-Robson, Colonel Sir Arthur	1	1	0
Mercers' Company	100	0	0
McKerlie, J., Esq., M.R.C.V.S.	5	5	0
Midland Counties Veterinary Medical Association	15	15	0
Morris, Chas. H., Esq.	5	0	0
Moore, Dr. I. Irwin, F.R.C.S.	5	5	0
Montgomerie, R. F., Esq., F.R.C.V.S.	1	1	0
National Hunt Committee	50	0	0
National Veterinary Medical Association of Great Britain and Ireland	105	0	0
Nicholson, J. H., Esq.	5	0	0
North of Ireland Veterinary Medical Association	5	5	0
Novello, Ivor, Esq.	1	1	0
Perkins, L. E., Esq., M.R.C.V.S.	3	3	0
Phillips, Miss A. P.	1	0	0
Phillips, F. S., Esq.	20	0	0
Queen's Bays, the Officers of	13	14	0
Quinlan, D., Esq., M.R.C.V.S.	5	5	0
Richardson, Mrs. J. B....	1	1	0
De Rothschild, Anthony, Esq., C.V.O.	52	10	0
De Rothschild, Lionel, Esq., O.B.E.	52	10	0
Royal Artillery, the Officers, 4th Field Bde. of	6	15	0
Royal Lancashire Agricultural Society	105	0	0
Sainsbury, Mrs. W.	5	5	0
Scott, F. C., Esq., M.R.C.V.S.	5	0	0
Shaw, J. K., Esq., M.R.C.V.S.	5	0	0
Shaw, W. F., Esq., F.R.C.V.S.	5	0	0
Simons, G., Esq., M.R.C.V.S.	1	1	0
Simpson, Lt.-Col. P. J., F.R.C.V.S.	88	15	0
Smith, Major John, M.R.C.V.S.	2	2	0
Smythe, W. Dunville, Esq.	1	1	0

	£	s.	d.
Spencer, Trevor F., Esq., M.R.C.V.S.	5	5	0
Summers, Mrs. E.	3	3	0
Tenison, Mrs. Gerald	5	0	0
Thorburn, E. J., Esq., and Wilkins, H. C., Esq., M.R.C.V.S.	5	5	0
Todd, Miss M. M.	0	15	0
Turf & Hoar, Ltd., Messrs.	2	2	0
Turner, Rudge & Turner, Messrs.	5	5	0
United Dairies, Ltd.	52	10	0
Varley, Gilbert, Esq.	5	0	0
Vincent, Philip, Esq., M.R.C.V.S.	1	0	0
Warren, Major J. R.	2	0	0
Wearing, R. R. P., Esq.	1	1	0
Webb, Major E. Clive, F.R.C.V.S.	5	0	0
West, Dr. Basil, M.R.C.V.S.	1	1	0
Whicher, Captain A., M.R.C.V.S.	1	1	0
Whish, Miss G.	1	1	0
Windsor, J., Esq.	1	0	0
Wisden, Mrs. G.	3	3	0
Woodward, W., Esq.	5	5	0
Wright, T. A., Esq.	1	1	0
Total Subscriptions at July 15th, 1927	£12,792	18	3

Review

The Health of the Nation. By Col. F. E. Freemantle, M.P., F.R.C.P., F.R.C.S., etc. Pp. 209. Price 8/6. London: Philip Allan.

A book that amply fulfils the author's hope, i.e., "That it might be useful to all concerned in bringing together in right proportion the main facts and factors in the health of the people and the general system of law, authority and administration affecting each issue."

In his foreword, The Rt. Hon. Neville Chamberlain, Minister of Health, sketches the growth of the Public Health system, lays stress on the wideness of its scope, says we have left behind the days of the parish pump methods, and that it is only by the co-operation of the people themselves that the health services can properly perform their function.

In 15 interesting chapters the author unfolds to us the important position Public Health has held, is holding, and hopes to hold, in the future.

In wading through masses of facts and figures, which we have no reason to doubt, it is interesting to note many points of interest to the veterinary profession.

In the Ministry Group concerned with Public Health there are 103 Medical Officers, but we see no mention of any Veterinary Officer.

We note that veterinary surgeons are valuable under local authorities in connection with dairy cows and sometimes as meat inspectors. We would venture to state that a meat inspector should ***always*** be a V.S.; and further, that his position should be such that any future author need not class him with "The host of subordinates from laboratory attendants to rat-catchers."

XUM

May it not be that the reason that "clerks of an authority hold the master key" is due in part to the improper recognition of valuable officers.

We agree that good meat depends largely on its condition in the slaughter house, and further state that if proper veterinary supervision was exercised in all cases the public would be free of all worry and anxiety either as regards their meat or the humane slaughter of animals.

Under the heading "Milk" the author states that 1 in 40 of our cattle are officially reported to be tuberculous. This will certainly draw the attention of the layman to the unofficial cases if he realises that the 1 in 40 comprise only those in the last stages of the disease.

He ends this paragraph by saying that "The solution of this problem depends on strict administration and on the advance and better use of veterinary surgery" with which statement we entirely agree.

The country depends on, amongst other things for the further reduction of TB, a much improved milk supply and continued research. We venture to state that given the opportunity the veterinary profession can fulfil both of these requirements.

In Chapter XVI, under the professions, he gives a brief *résume* of the veterinary profession, but why our profession should be relegated to a position behind that of midwifery, sanitary inspections, etc., we fail to understand.

In Scotland we note that the officials enumerated as being under the local authority include a veterinary inspector, his position being officially recognised, due, no doubt, to the greater sagacity of the Scotch.

It must come as a shock to our Scotch readers to learn that alcoholism is an evil still of grave magnitude in Scotland. We would ask why single out Scotland ?

In the chapter Overseas no mention is made of Veterinary Services; a grave omission, as in our Colonies, the value of Veterinary collaboration in Public Health matters is officially recognised.

In the list of leading organisations connected with Public Health, we find no mention of any Veterinary Body or Institution. We would ask why ? considering the important part the veterinary profession has to play in any scheme to further the interests of the Public Health.

In his conclusion the author points out that the cost of Health administration is small compared with other national enterprises, but that the profits both direct and indirect are greater.

Publishers' Notices

All communications should be addressed to 7 & 8, Henrietta Street, Covent Garden, London, W.C.2. Telephone: Gerrard 4646. Telegrams: "Baillière, Rand London."

Letters for the JOURNAL, literary contributions, reports, notices, books for review, exchanges, new instruments or materials, and all matter for publication (except advertisements) should be addressed to the Editor.

Copy of advertisements should be in the hands of the publishers—Baillière, Tindall and Cox—not later than the 25th of the month, or if proof is required, not later than 23rd.

Binding Cases for Volume 82 and any other previous volumes can be obtained from the publishers. Price 2s. 9d. post free.

Annual Subscription, 21s. ($5.00 U.S.A. currency) post free.

XUM